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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,255	08/20/2003	Mark Cullen	CULLN-001B	6075

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EXAMINER	
NGUYEN, TAM M	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,255	CULLEN, MARK	
	Examiner	Art Unit	
	Tam M. Nguyen	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-88* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In view of the appeal brief, filed on May 25, 2006, PROSECUTION IS HEREBY REOPENED. A new ground(s) of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 40-88 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling removing sulfur and nitrogen from a crude oil, does not reasonably provide enablement for upgrading a crude oil. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. As described in the specification, enablement is provided for removing sulfur and nitrogen compound from a crude oil. The limitation "a process

for upgrading a crude oil fraction" would include other processes such as alkylation, isomerization, hydrogenation, dehydrogenation, dimerization, or cracking which is not enable by the specification and undue experimentation would be required to determine how the claimed process would be effective as such processes.

Claims 40-48 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The phase-separation step is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Contaminants such as sulfur compounds would not remove from the crude oil if a heavier layer comprising the sulfur compounds is not separated from the crude oil.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 41 and 48-51 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation "hydrogen peroxide" in line 2 of claim 41 renders the claim indefinite because adding "hydrogen peroxide" into the crude oil would result in an aqueous phase while claim 40 claims that the process is in the absence of an aqueous phase.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 40 and 41 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 4 of copending Application No. 10/429,369. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization.

The present claimed set does not claim a hydrodesulfurization step.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the copending claimed set by omitting the hydrodesulfurization step if the function of the step is not desirable.

Claims 40 and 41 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 12, and14 of copending Application No. 10/411,796. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization.

The present claimed set does not claim a hydrodesulfurization step.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the copending claimed set by omitting the hydrodesulfurization step if the function of the step is not desirable.

Claims 40-46 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35-39 of copending Application No. 10/431,666. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization and.

The present claimed set does not claim a hydrodesulfurization step.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the copending claimed set by omitting the hydrodesulfurization step if the function of the step is not desirable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 40-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunnerman et al. (6,500,219).

Gunnerman discloses a process for removing sulfur from a hydrocarbon feed (e.g., crude oil, diesel, gas oil, gasoline) by preheating the feed and contacting it with an oxidizing agent while exposing the feed to sonic energy and catalyst comprising nickel or tungsten. The process is operated at residence time of from about 0.3 to about 30 minutes, at a temperature of from 70-80° C, and at about atmospheric pressure. (See col. 3, lines 18-45; col. 4, lines 38-47; col. 5, line 23 through col. 6, line 37; example 1)

Gunnerman does not disclose that the process is operated in the absence of an aqueous phase.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gunnerman by operating the process in the absence of an aqueous phase if the function of the aqueous phase is undesirable. See *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989). See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

Claims 58-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunnerman et al. (6,500,219).

Gunnerman discloses a process for removing sulfur from a hydrocarbon feed (e.g., crude oil, diesel, gas oil, gasoline) by preheating the feed and contacting it with an oxidizing agent while exposing the feed to sonic energy and catalyst comprising nickel or tungsten. The process is operated at residence time of from about 0.3 to about 30 minutes, at a temperature of from 70-80° C, and at about atmospheric pressure. (See col. 3, lines 18-45; col. 4, lines 38-47; col. 5, line 23 through col. 6, line 37; example 1)

Gunnerman does not disclose that the process is operated in the absence of a surface active agent.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gunnerman by operating the process in the absence of an a surface active agent if the function of the aqueous phase is undesirable. See *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter.1989). See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

Claims 78-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunnerman et al. (6,500,219).

Gunnerman does not disclose that the process is operated in the absence of an oxidizing agent.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Gunnerman by operating the process in the absence of an oxidizing agent if the function of the aqueous phase is undesirable. See *Ex parte*

Wu, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989). See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

Claim 76 and 83-88 is rejected under 35 U.S.C. 102(b) as being unpatentable over Inoue (3,616,375).

Inoue discloses a desulfurization process wherein a hydrocarbon feed (e.g., crude oil) is contacted with ultrasonic energy. The process is operated at ambient temperature and pressure. (See col. 1, lines 27-38; col. 2, lines 20-44; col. 5, lines 5-8; Examples I-V)

Inoue does not disclose that the feed is heated while exposing the crude oil fraction to sonic energy.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Inoue by heating the feed to couple degrees in temperature because it would be expected that the results would be the same or similar when operating the process at either ambient temperature (e.g., 28° C) or 35° C.

Claims 77-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue (3,616,375) as applied to claim 76 above, and further in view of Gunnerman et al. (6,500,219).

Inoue does not specifically disclose a feed as claimed in claims 77-81.

The process of Gunnerman is as discussed above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Inoue by utilizing a feedstock as taught by Gunnerman because any sulfur containing hydrocarbon feed can be treated in the process of Inoue.

Claim 82 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue (3,616,375) alone or in view of Gunnerman et al. (6,500,219).

Inoue does not disclose that the process has a residence time of from 1 second to 1 minute.

The process of Gunnerman is as discussed above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Inoue by operating the process at the claimed residence times because Inoue teaches that the process is durable to release at least part of the sulfur from the hydrocarbon feed. Therefore, it would be expected that at least one sulfur would be released from the feedstock when the resident time is 1 minute.

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Inoue by operating the process at the residence times as taught by Gunnerman because such residence times are effective in the process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen
Examiner
Art Unit 1764

TN